

# Evaluating the Effects of Medical Explorers a Case Study Curriculum on Critical Thinking, Attitude Toward Life Science, and Motivational Learning Strategies in Rural High School Students

Lance G. Brand

## ABSTRACT

The purpose of this study was three-fold: to measure the ability of the *Medical Explorers* case-based curriculum to improve higher order thinking skills; to evaluate the impact of the *Medical Explorers* case-based curriculum to help students be self directed learners; and to investigate the impact of the *Medical Explorers* case-based curriculum to improve student attitudes of the life sciences.

The target population for this study was secondary students enrolled in advanced life science programs. The resulting sample ( $n = 71$ ) consisted of 36 students in the case-based experimental group and 35 students in the control group. Furthermore, this study employed an experimental, pretest-posttest control group research design. The treatment consisted of two instructional strategies: case-based learning and teacher-guided learning.

Analysis of covariance indicated no treatment effect on critical thinking ability or Motivation and Self-regulation of Learning. However, the *Medical Explorers* case-based curriculum did show a treatment effect on student attitudes toward the life sciences. These results seem to indicate that case-based curriculum has a positive impact on students' perspectives and attitudes about the study of life science as well as their interest in life science based careers. Such outcomes are also a good indicator that students enjoy

and perceive the value to use of case studies in science, and because they see value in the work that they do they open up their minds to true learning and integration.

Of additional interest was the observation that on average eleventh graders showed consistently stronger gains in critical thinking, motivation and self-regulation of learning strategies, and attitudes toward the life sciences as compared to twelfth grade students. In fact, twelfth grade students showed a pre to post loss on the Watson-Glaser and the MSLQ scores while eleventh grade students showed positive gains on each of these instruments. This decline in twelfth grade performance is an endemic indicator of underlying problems that exists in this transitional year of education and supports the need to strengthen the transitional connections between high schools and institutions of higher learning.